DEPARTMENT OF INDUSTRIES

BOMBAY PRESIDENCY

ANNUAL REPORT

1930-31

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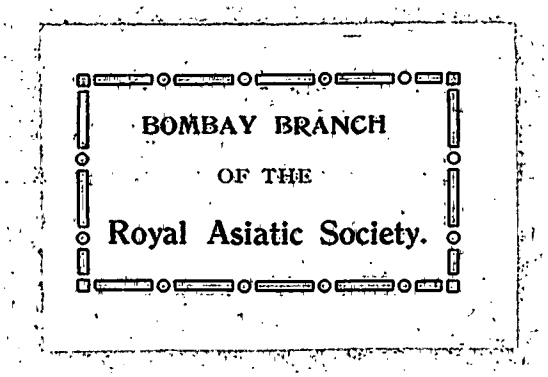

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OFFICE OF THE DIRECTOR OF INDUSTRIES.
OLD CUSTOM HOUSE :
Bombay, 25th May 1931.

From

P. B. ADVANI, ESQ., M.Sc., M.I.E., J.P.,
Director of Industries, Bombay ;

To

THE SECRETARY TO GOVERNMENT,
General Department,
Bombay.

Subject.—Annual Report of the Department of Industries, 1930-31.

Sir,

I have the honour to submit the Annual Report of the Department of Industries for the year 1930-31.

I have the honour to be,
Sir,
Your most obedient servant,

P. B. ADVANI,
Director of Industries.

GRADUATE OF THE ASIATIC SOCIETY

Annual Report of the Department of Industries, Bombay Presidency, for the year 1930-31

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CHAPTER I

GENERAL INDUSTRIAL OUTLOOK DURING THE YEAR

During the year under review there was a widespread propaganda for the use of Swadeshi articles. Apart from the activities in this direction of political bodies like the Congress a number of Swadeshi Associations such as the Bombay Swadeshi League were formed for the purpose in different places. Swadeshi shops and commercial museums were opened in different towns. Various institutions such as Chambers of Commerce took an active and live interest in the Swadeshi propaganda. There were no serious strikes in factories. These factors should have given a fillip to the local industries. But owing to world economic causes commodity prices declined very considerably. The price of a candy of cotton went down to Rs. 180 which is almost half the highest attained in the previous year. Price of wheat went down lower than the prewar figure. The purchasing power of the people was thus greatly reduced. This was aggravated by local political causes ; there were frequent hartals and business was generally disorganised. During the period under review there was, therefore, an acute commercial and industrial depression.

STATE OF SOME OF THE MORE IMPORTANT EXISTING INDUSTRIES

2. **Cotton Textile Industry.**—The Cotton Industry in this Presidency has been in recent years passing through trying times. This specially applies to the Mills in the Island of Bombay. So far as the year under report is concerned, out of 39 Bombay Island Mills, annual reports of which have been received in this office up to the time of writing, no less than 27 showed a loss in working, the total loss being some Rs. 98 lakhs. The remaining 12 made a profit of Rs. 17·66 lakhs. The annual reports of most of the Ahmedabad Mills will not be available till later in the year. It is, therefore, not possible to give any figures for them. It is reported, however, that Ahmedabad did fairly well during the year. According to the President of the Ahmedabad Millowners' Association, the profits of Ahmedabad Mills in 1929 amounted to Rs. 67 lakhs while the losses were only Rs. 1·33 lakhs. In Sholapur five mills showed a profit of Rs. 3·92 lakhs and three lost about Rs. 2·69 lakhs. In Khandesh four of the mills worked at a profit, the total profit being Rs. 8·45 lakhs.

The Mills, specially those of the Bombay Island, steadily expanded their direct sales system during the year by opening their own retail shops and they advertised their goods to a larger extent than before. The question of reduction in operating costs has engaged the attention of the owners. And in Bombay Island 7 groups of leading Companies comprising 31 mills considered a scheme for a merger and appointed a strong committee to go into the matter. Two experts were brought out from Lancashire to help and advise the Committee. Unfortunately, owing to some difficulties the idea was ultimately abandoned. It is hoped,

however, that small groupings will take place and other steps will be taken to reduce operating costs and increase efficiency.

In the year under report increased tariff sanctioned by the 1930 Budget Session of the Legislative Assembly came into operation and the 1931 Budget Session of the Assembly has sanctioned a further additional duty of 5 per cent. The Textile Industry has, therefore, got a higher degree of protection than expected. This coupled with the widespread desire for the purchase of Swadeshi goods ought to enable the Industry to do well in the near future in spite of the reduced purchasing power of the people.

The following statistical tables covering cotton mills in the Presidency will be of interest :—

For year ending 31st August	Number of mills	Number of spindles	Number of looms	Average number of hands employed daily	Cotton consumed	Paid up Capital
					Cwts.	Rs.
1929 ..	219	5,951,198	132,707	214,215	4,451,419	23,99,57,539
1930 ..	220	6,172,792	135,808	252,488	5,511,184	23,92,02,145
Percentage increase		3·7	2·3	18	24	....

Production in and Imports of Yarn and Piece-goods into Bombay Presidency

Year ending 31st March	Yarn (in million pounds)			Piece-goods (in million yards)		
	Presidency production	Imports into the Presidency	Percentage of imports to production	Presidency production	Imports into the presidency	Percentage of imports to production
1928-29	330	21	6·4	1,294	869	67·2
1929-30	467	19	4·1	1,725	789	45·7
1930-31	393*	10†	2·5	1,499*	347	23·1

* For 10 months ending January 1931.

† Represents gross imports as re-exports are not available.

3. **Woollen Mills.**—The condition of the woollen industry continued to be unsatisfactory during the year. In 1920 there were 5 woollen mills in the Presidency. In 1929 there were only 3 such mills working in the Presidency. During the latter part of 1929, one of these mills with a paid up capital of Rs. 13 lakhs went into liquidation. No new mills were started. Thus, in 1930 only two mills were working. The average number of persons employed daily went down from 2,014 in 1929 to 1,196 in 1930 or by nearly 41 per cent. There was a decrease in production as well. In 1929, 6,408,257 lbs. valued at Rs. 74,97,627 of woollen goods were produced in the Presidency mills. In 1930, the woollen mills showed a production of only 1,691,242 lbs. valued at Rs. 30,91,787.

Imports of woollens in Bombay and Karachi in 1928-29 amounted to Rs. 2·23 crores, in 1929-30 to Rs. 1·73 crores and in 1930-31 to Rs. 1·17 crores. From the latter figures the value of re-exports has not been deducted as the same is not yet available. In addition, Bombay also no doubt imported woollens from Cawnpore and other Indian centres. The local mills, therefore, met only a comparatively small part of the total demand of the Presidency. The industry has fared badly in recent years due to the very keen foreign competition which it is unable to meet.

4. **Hosiery Industry.**—Besides some of the cotton mills in the Presidency which have knitting machines for making hosiery, there are also several factories which exclusively manufacture hosiery. The total number of factories making hosiery including the mills is about 20. The production of hosiery in the Presidency in 1929-30 was approximately 546,000 lbs. valued at about Rs. 16·38 lakhs.

The imports of cotton and woollen hosiery amounted to about Rs. 41 lakhs or about 2½ times the Presidency's production. From this it is obvious that there is a wide scope for the further development of the industry in the Presidency.

The hosiery industry is reported to have done fairly well during the year under report.

5. **Chemical Industry.**—The chemical industry, except the heavy chemical industry, in the Presidency on the whole did fairly well during the year. The soap factories worked at their full capacity and several new soap works were started during the year. The Pharmaceutical manufacturers also did fairly well. The makers of toilet goods like say cold creams, snows, hair oils, perfumes, etc., are reported to have done well and several new products like tooth paste, shaving cream, shampoos, etc., which were not produced in this country are now being manufactured.

It is, however, to be regretted that the state of the heavy chemical industry did not improve. There are three heavy chemical manufacturing concerns in the Presidency and two of them worked at a loss during the year. The Tariff Board Report on the chemical industry has not yet been

published and it is held that so long as adequate protection is not granted to the heavy chemical industry it will not progress.

6. **Sugar Industry.**—As mentioned in the previous year's report, there is only one sugar factory in the Presidency. The value of sugar and molasses produced and sold by this factory increased from Rs. 11·7 lakhs in the previous year to Rs. 15·89 lakhs in the year under report. The company in question worked at a profit of about Rs. 3 lakhs during the year as against a loss of Rs. 3·18 lakhs in the previous year. It was, however, not able to declare a dividend for its shareholders. In the last year's report it was mentioned that duty on sugar had been increased from Rs. 4-8-0 per cwt. to Rs. 6 per cwt. The duty has recently been further increased. The rates of the revised tariff are given in paragraph 14, Chapter II. It is expected that the increased duty will help the local industry considerably.

In 1930-31 net imports of sugar into Bombay and Karachi were 444,766 tons or 3 per cent. more than last year valued at Rs. 5·08 crores. There is suitable land available in the Deccan for cane growing by any new sugar companies which may come into existence and experts have stated that really good cane can be grown there at reasonable prices. Demand for sugar is there and now additional protection has been granted. There appears, therefore, no reason why new factories may not be successfully established.

7. **Match Industry.**—There are altogether 16 match factories in the Presidency, out of which 3 are in the Indian States. The total approximate investment in the industry is Rs. 70 lakhs including the Western India Match Company's estimated investment of Rs. 32 lakhs for their factory at Ambernath. The average number of persons employed during the year was about 6,400. The total capacity of all the factories in the Presidency is about 93 lakhs gross match boxes per year. It is reported that during the year most of the factories, excepting the Western India Match Factory, were not able to work at full capacity. The total production during the year, therefore, amounted to approximately 75 lakhs gross boxes valued at about Rs. 65 lakhs. The total production of matches in the Presidency is in excess of the local demand. A portion of the production is, therefore, exported to other parts of the country. Imports of matches during the year under report amounted to 2·92 lakhs gross boxes valued at Rs. 2·83 lakhs. From the above figures it would appear that there is no scope for developing the industry further in the Presidency proper. There is, however, some scope for the industry in Sind where geographical, climatic and other conditions are favourable. During the year under report, according to the Indian Match Manufacturers' Association, the match industry was hard hit by the alleged price-cutting-war between the Indian Match Manufacturers on one side and the Western India Match Company on the other. The latter

company, however, made during the year a profit of about Rs. 2·99 lakhs and paid a dividend at the rate of 7 per cent. on the paid up capital.

8. **Paper Industry.**—During the calendar year 1929, three paper mills were working in the Bombay Presidency. Of these three, one is a private concern ; the other two establishments are owned by one company whose paid up capital was Rs. 9,24,135. The average number of persons employed daily was 552.

During the year 1930, the same three mills continued working. No new companies were registered. The paid up capital remained the same. But the average number of men employed daily increased from 552 to 594 or by about 8 per cent.

The production of paper in the two years, viz., 1929 and 1930, was respectively 2,167 tons valued at Rs. 8·22 lakhs and 2,348 tons valued at Rs. 9·19 lakhs. Thus, the increase in production was 8 per cent., which is the same as that in the number of men employed.

The imports in 1929-30 in Bombay and Karachi amounted to nearly 51,000 tons valued at Rs. 146 lakhs. The local production in 1930 was 2,348 tons or about 4½ per cent. of the imports. There is, therefore, considerable scope for the expansion of this industry in the Presidency.

During 1929-30, two of the mills for which the latest figures are available worked at a small profit although they were not able to declare any dividend. During 1930-31 it is reported that the mills in question did well.

9. **Oil Mills.**—At the end of the year 1929-30 there were 9 oil mills which accounted for a paid up capital of Rs. 60·39 lakhs. In 1930-31, two new oil mills were started ; but as against this, one mill went into liquidation. Thus, at the close of the year 1930-31 there were ten oil mills with a paid up capital of Rs. 60·45 lakhs.

In addition to the registered oil companies mentioned above, there were working in this Presidency 36 other oil establishments. All these together gave employment to about 2,080 persons.

The oil crushing industry has maintained its progress as can be seen from the fact that the imports of oil crushing and refining machinery, which were of the value of Rs. 11·75 lakhs in 1928-29, were valued at Rs. 11·18 lakhs in 1929-30.

In 1929-30 about 809 tons of oil valued at Rs. 7 lakhs were imported into the Presidency. To this, however, must be added items of imports of paints, soap, vegetable ghee, etc. which can be manufactured here from local oil. The oil contents of these imports may be put down at 18,400 tons.

In 1929-30, no less than 3,90,325 tons of seeds were exported. Nearly 14 per cent. or 55,000 tons of these seeds will need to be crushed in the Presidency if such articles of import as paints, soap, vegetable ghee, etc.

were made in the Presidency to replace the equivalent imports. There is, therefore, considerable scope for the expansion of this industry.

10. **Soap Industry.**—In 1930-31 there was only one registered company for making soaps and candles with a paid up capital of Rs. 5 lakhs. In Bombay City alone, however, there were as far as information is available about 20 other unregistered soap factories. The approximate production of these factories may be put down at 8,000 tons per year.

The imports in 1929-30 amounted to about 11,763 tons valued at Rs. 78 lakhs. The imports of soap into India during the year 1930-31 declined by nearly 33 per cent. and the imports of caustic soda increased by nearly 22 per cent. over the previous year. Both of these factors indicate that the production of soap increased considerably during the year. The imports in spite of the decline during the year show that there is yet a considerable scope for the expansion of the industry. The industry as a whole is reported to have done well during the year.

11. **Glass Industry.**—There is only one registered establishment in the Presidency with a paid up capital of about Rs. 4·84 lakhs. Besides this company there are three other unregistered companies. The average number of persons employed by all these concerns is about 400.

The approximate value of the glass produced in the Presidency is Rs. 3 lakhs or about 2½ per cent. of the imports which in 1929-30 were valued at Rs. 127·4 lakhs. The main articles manufactured are glass jars, lamp chimneys and lantern globes. Recently, however, some of the manufacturers have been manufacturing such novelties like glass lotahs, paper weights, flower pots, etc. Due to the prevailing high freight rates on the raw materials and the comparative high cost of coal in the Presidency and also owing to the dumping of cheap glass articles by some foreign countries the industry did not fare well during the year under report.

12. **Engineering Industry.**—At the end of 1929-30 there were 24 registered companies with a paid up capital of Rs. 98·55 lakhs. In 1930-31, two new companies were floated making a total of 26 companies with a total paid up capital of Rs. 99·71 lakhs. Besides these, there are a number of proprietory concerns. The total number of big and small engineering concerns may be put down at about 136. The largest number are engaged in general repair work. Some 21 are engaged in automobile repair work; out of these, one is a motor assembly plant.

Comparatively simple and small machinery such as rice mills, flour mills, cane crushing mills, etc. is made in a number of these shops, but practically all the machinery required for our important industries such as Textile Mills etc. is imported. Same remarks apply to Electrical machinery and accessories such as lamps, fans, etc., all of which to the extent of some crores of rupees are imported. There is a big field here for private enterprise.

During the year under report the Engineering Shops on the whole had to work under difficult conditions brought about largely by the general trade depression.

13. **Gold and silver thread Industry.**—This industry is chiefly established at Surat. It is also carried on, on a small scale, in Bombay, Yeola and Poona. The details of this industry are given in Chapter II of this report. Owing to acute trade depression it being a luxury industry, it did not do well during the year under report.

14. **Cigarette Industry.**—In Bombay there are five private cigarette factories working giving employment to about 240 persons.

The annual local production of cigarettes is worth about Rs. 8·4 lakhs and is only 10½ per cent. of the total imports valued at about Rs. 76 lakhs. The acreage under tobacco cultivation in India is about 1,000,000 acres and the estimated yield is about 374,000 tons of tobacco. Out of the total acreage about 25,000 acres are exclusively cultivated for the highest class of cigarette tobacco equal to one of the best Virginia Brands. The total yield is about 7,000 tons which could be utilised for the manufacture of good quality of cigarettes.

It is obvious from the above figures that there is a large field in this Presidency for the establishment of more cigarette factories and the further development of this industry.

The Cigarette Industry is reported to have done well during the year under report.

NEW INDUSTRIES

15. **Vegetable Ghee.**—During the year under report several new industries have made their appearance in the Presidency. One of the most important development in the chemical industry during the year has been the establishment of a factory for the production of hydrogenated oil commonly known as vegetable ghee. The plant started operation in August 1930 and it is reported that the concern is now working at full capacity.

The following figures of imports of vegetable ghee into India and Bombay Presidency will show the scope for the industry :—

Year	Total India		Bombay	
	Weight in tons	Value in lakhs of rupees	Weight in tons	Value in lakhs of rupees
1928-29	22,909	177·27	14,325	110·19
1929-30	16,056	120·05	11,342	84·33
1930-31	14,801	109·03	9,013	64·42

The prospects of hydrogenation of oil industry are good and another firm—non-Indian—with international resources and interests has now decided to put up a big plant for the manufacture of vegetable ghee in Bombay and they expect to begin operation in the beginning of next year.

16. **Rubber soled canvas shoes.**—There is a great demand for canvas shoes with rubber soles in this country and it is interesting to note that a firm which has a reputation of being the pioneer in starting new industries has started a factory in one of the suburbs of Bombay for the manufacture of rubber soled canvas shoes. The firm is working under great hardships due to the dumping of goods from foreign countries especially from Japan. The factory is at present producing about 300 to 400 pairs of canvas shoes per day. The following figures of imports for rubber soled canvas shoes will show the importance of the industry :—

Year	Total India		Share of Bombay	
	Pairs in lakhs	Value in lakhs of rupees	Pairs in lakhs	Value in lakhs of rupees
1928-29	19·01	31·86	8·61	13·37
1929-30	27·81	41·18	11·18	13·43
1930-31	50·39	41·15	19·10	15·75

It will be noticed that there has been an enormous decrease in the price of shoes. In 1929-30, 27 lakhs of pairs were valued at Rs. 41 lakhs, while the same amount in 1930-31 represented 50 lakhs of pairs of shoes.

17. **Glass Bangles.**—This Presidency is responsible for more than half of the total imports of bangles in this country, as will be seen from the following table :—

Year	Total for India	Share of Bombay
	Value in lakhs of rupees	Value in lakhs of rupees
1928-29	76·76	44·01
1929-30	85·23	55·00
1930-31	49·90	32·17

A factory for the manufacture of glass bangles has been started in one of the suburbs of Bombay producing about 1¼ lakhs of pairs of bangles valued at about Rs. 650 per day. The factory is reported to be doing fairly well.

18. **Shoe Polishes.**—There was hardly any Indian made shoe polish on the market before, but during the year several brands of shoe polishes made in this country came on the market. Although most of the demand for Indian made shoe polishes has so far been supplied from the factories outside the Presidency, it is gratifying to note that some small establishments for the manufacture of this article have come into existence during the last 6 or 7 months. The following figures of imports will show the importance of this industry :—

Year	Total for India	Share of Bombay
	Value in lakhs of rupees	Value in lakhs of rupees
1928-29	16·70	9·17
1929-30	17·58	9·68
1930-31	13·01	7·50

19. **Gas Mantles.**—Some firms have started manufacturing gas mantles for which there is a good demand due to the increased use of Petromax lamps. It has not been possible to find out the extent of production of gas mantles in the Presidency but it can safely be said that the production is quite appreciable.

The table of imports given below will give an idea of the scope there is for this industry :—

Year	Total for India	Share of Bombay
	Value in lakhs of rupees	Value in lakhs of rupees
1928-29	6·69	4·46
1929-30	8·41	4·71
1930-31	6·28	3·79

NEW FLOATATIONS

20. Despite the fact that there was general trade slump, during the year under review a number of new companies were floated. Seven of these were in connection with motor works with authorised capital of Rs. 26·5 lakhs, 6 Electric companies with authorised capital of Rs. 35 lakhs, 1 Match company with authorised capital of Rs. 1·25 lakhs, 3 cotton mill companies with authorised capital of Rs. 46 lakhs, 1 sugar company with authorised capital ot Rs. 7 lakhs, 1 cement company with authorised capital ot Rs. 3·60 lakhs, 1 flour mill company with authorised capital of Rs. 3 lakhs, 1 in connection with gins and presses with authorised capital of Rs. 20 lakhs, 1 in connection with tiles with authorised capital of Rs. 12 lakhs, 2 in connection with oil mills with authorised capital of Rs. 2·50 lakhs, 1 in connection with aluminium ware with authorised capital of Rs. 5 lakhs, making a total authorised capital of Rs. 1·62 crores.

During the year, 52 new concerns started working or were sufficiently extended so as to come under the Indian Factories Act. Important amongst these were 8 cotton gins, 3 dyeworks, 1 oil mill, 2 rice and flour mills, 1 canning factory.

During the year under review, 1 Match Company, 5 Cotton Mills, 1 Oil Mill, 2 Mining and Quarrying Concerns, 4 Cinema Film Companies, 2 Ginning and Pressing Factories and 1 Metal Factory, with total paid up capital of Rs. 76·6 lakhs, went into liquidation.

CHAPTER II

WORK OF THE DEPARTMENT—ORGANISED INDUSTRIES

21. In this Chapter a brief description is given of the various activities of the Department in the interest of organised industries.

There are a number of small scale organised industries in this Presidency, not to speak of cottage industries, which have in use technical processes and appliances capable of considerable improvements which when carried out will enable the factories in question to produce better quality and larger quantities of finished products for the same labour and cost. This kind of work naturally involves a careful study of the industry concerned and a considerable experimental work. Successful endeavours in this direction would enable the industries concerned to compete better with imports and would also increase production in the country. The staff and the resources of the Department are very limited. It is not, therefore, possible to undertake work on a large scale. During the year, however, 2 industries were studied, viz., Gold Thread Industry and the Twine Making Industry.

In a similar manner, there are certain small scale industries which could be established in the Province and which at present either do not exist or exist on a restricted scale. In order that such industries may be established,

some practical experimental work in connection therewith is necessary. During the year under report the Department undertook this work on laboratory scale in connection with Tallow Substitute and China Clay.

The Department also indirectly helped some industries like Gold Thread Industry and Sugar Industry by making representations to the Tariff Board. It also made representations to Government in connection with the Match Industry and Tanning Industry.

Requests are often received from small investors for information about the establishment of small scale factories. It is very difficult for a small investor to afford a consultant's fees ; and even if he could do so it is often very difficult for him to find a suitable consultant. To overcome this difficulty the Department during the year studied the possibilities of several small scale industries, and detailed estimates of a number of them were worked out and were made available to genuine enquirers.

In a similar manner, owners of small scale factories meet with difficulties of a technical nature in their processes of manufacture. They either cannot afford the fees of a technical expert or are often not able to find suitable expert to advise them. A number of such requests were received during the year and the Department was able to render practical assistance which was gratefully acknowledged.

A fairly large number of inquiries were received relating to commercial and industrial statistics. Some work was also done under the head " Mines and Minerals " and " Fishing". Examples of work under all the above heads and in connection with State-Aid to Industries are given in the succeeding paragraphs.

PRACTICAL INVESTIGATIONS AND EXPERIMENTS WITH A VIEW TO IMPROVE THE QUALITY AND QUANTITY OF PRODUCTS OF EXISTING INDUSTRIES

(*a*) The Real Gold Thread Industry

22. The real gold thread industry of the Bombay Presidency is one of its important industries organised on small factory basis. It is chiefly carried on in Surat, Bombay, Ahmedabad, Poona and Yeola. Of these places Surat is by far the most important centre where the manufacture of gold thread has been developed on modern lines with the assistance of power-driven machinery.

It would be useful to give here in brief the history of the industry in recent years. About 25 years ago there were some 2,000 persons employed in Surat in making gold thread. At about this time imported gold thread which had a better finish and was sold at a cheaper price began to oust the Indian article with the consequent result that the industry declined rapidly becoming practically extinct, so that about 16 years ago there were hardly 25 persons engaged in the manufacture of gold thread in Surat. Other centres of manufacture in the Presidency were affected adversely to the same extent. During the War, owing to the difficulty in obtaining

the foreign article, a fillip was given to the industry in this Presidency. The Department of Industries awarded foreign Travelling scholarships to Messrs. Shastri and Chapadia who on return from abroad helped the industry to adopt machinery as in France. With the introduction of machinery and increase in duty the value of imported gold thread fell.

23. My personal visits to a number of factories in Surat during 1929 had convinced me that there was a considerable scope for improvement in the technical processes followed and in the general organisation of the industry. Accordingly as soon as the Industrial Engineer was appointed in 1930, he was deputed to proceed to Surat and make a detailed study with a view to helping the industry both in the matter of sales and technical processes of manufacture. The investigations have revealed the following position—

(1) *Magnitude of the industry.*—There are in all about 750 small factories in this Presidency, more than half of which employ power-driven machinery engaged in the manufacture of gold thread and accessories employing about 25,000 persons. The total block capital invested is about Rs. 3·50 lakhs while the total working capital invested is about Rs. 60 lakhs. Before the present trade depression the total production was estimated at about Rs. 100 lakhs. Associated with the gold thread industry is that for the manufacture of other similar articles such as spangles, purls, katoris, etc. Of the estimated value of the total production, 50 to 60 per cent. or from Rs. 50 to 60 lakhs may be taken as the value of real gold thread used in weaving of cloth and 40 to 50 per cent. or Rs. 40 to 50 lakhs as the value of items, such as spangles, purls and katoris, etc., used in embroidery work and the manufacture of laces.

(2) *The market of the industry.*—It was found that the local industry has practically captured the entire Bombay Presidency market for real gold thread, the imports of real gold thread as distinct from half-fine and imitation varieties being of the approximate value of Rs. 5 lakhs and Rs. 30,000 in 1930-31 in Bombay and Karachi respectively.

(3) *Other possible markets.*—Madras imports in 1930-31 of real gold thread, etc., were approximately of the value of Rs. 14 to 15 lakhs. Most of the Madras imports of real gold thread are of 1,200 to 1,800 yards per ounce variety used only for weaving into cloth. The Madras weavers claim that the finish etc. of the imported thread is better than that of Surat thread.

(4) *Competition.*—The prices for most qualities made in this Presidency are not determined by foreign competition but by internal competition which is very severe. There is a lack of organisation and owing to cut-throat competition, the condition of the industry was unsatisfactory.

(5) *Technical Processes.*—(*a*) The dyes used for both the cotton and silk yarns were not fast to the bleaching process and the chemical processes for gilding gold thread. The dyes ran when the cloth made with the thread was washed. (*b*) The proportions of chemicals used for the gilding bath were not accurately made up, nor was there a proper control of the temperature of the bath, of the speed of the thread and the current density, while the drying process and the reeling and hanking of the gold thread required improvements. (*c*) No effort has been made to adapt the existing wire drawing machines and hand-worked machines for giving a better quality of product. (*d*) A number of the existing machines are copies of old types of inefficient machines.

The chief requirements of the industry, therefore, are :—(*i*) Organisation amongst themselves for checking cut-throat prices and purchasing of raw materials at cheap rates, etc. ; (*ii*) Capture of Madras and other markets ; (*iii*) Improvement in technical processes of manufacture.

24. This Department has brought to the notice of the parties concerned the importance of organisation and further assistance if possible will be rendered to them in this direction.

25. The Department has been in touch with the Madras Department of Industries. Samples of gold thread used by the Madras weavers have been secured and reasons why Madras weavers object to the use of Surat gold thread have been ascertained. These reasons are briefly summarised as follows.

" It is true that weavers in Southern India prefer foreign-imported gold thread to Indian gold thread on account of its comparatively higher quality. The weavers who have tried Indian gold thread generally complain that the colour, tensile strength, regularity and evenness of the silk on which the lametta is wrapped as well as the gilding process are not quite as good as those of the imported gold thread. On account of the supposed superiority of the imported gold thread over Indian gold thread, there is a sustained demand for cloths woven with foreign gold thread, and it is believed that it retains its brightness over a longer period than Indian gold thread."

The Department as will be seen in a subsequent paragraph has made arrangements for improving the manufacture in Surat of gold thread so as to make it equal to the sample mentioned above. When success has been achieved in producing an article which is acceptable to the Madras market and at a price which will be competitive and will at the same time yield a reasonable return methods of manufacturing it will be demonstrated to the industry in general, with a view to helping it to capture the Madras market.

26. The Department has concentrated its attention on removing the defects mentioned in paragraph 3 (5) above.

In connection with dyes used, co-operation of a Bombay mill and a big importing house in dyes was sought. Experiments were conducted and as a result recipes were determined for dyes both for silk and cotton which will give colours fast to the bleaching process and the chemical processes for gilding gold thread.

The recipes and methods were made known to the interested parties and this work will be continued.

With regard to the question of proportions of chemicals used in the gilding bath, etc., the Industrial Engineer demonstrated to manufacturers at Surat how with the exercise of more care, a proper control of the temperature, of the current density, of the speed of the thread and proper drying, a much better quality of gold thread could be turned out. This has been acknowledged by manufacturers in letters to this Department in which it has also been stated that a considerable saving was made in the quantity of gold required for gilding.

It was, therefore, decided that this line of work should be developed further. A gold thread winding machine, a drying machine, and a gilding table were accordingly designed by the Industrial Engineer embodying improvements in the respective processes. The machines orders for which were placed with a local Engineering firm are now ready and will be demonstrated to manufacturers by the Industrial Engineer.

With the help of these machines it is hoped to produce samples of gold thread acceptable to the Madras weavers at competitive prices.

When the work on the above two important points has satisfactorily advanced, an attempt will be made to devise improvements in the existing wire drawing machines and other machines used in the processes of manufacture.

27. During the year under report, the industry was also helped in making a successful representation to the Tariff Board for an increase in duty. This has been mentioned in detail in another part of this report.

The question of establishment of a gold thread trade school at Surat is under the consideration of this Department.

(*b*) Cordage Manufacture

28. There are no factories in this Presidency which produce on modern and up-to-date machines a good class of cordage and twine. Although Bombay consumes a large quantity of cotton, jute and hemp cordage and twine, the major portion of same is imported. The imports in Bombay in 1930-31 were as follows :—

	Rs.
For cotton rope	11,46,326
For jute rope and twine	51,000
Cordage from other vegetable fibres ..	4,82,076
For fishing twine (estimated) ..	2,50,000
Total ..	18,88,402

Such factories as exist are small and contain crude wooden hand-worked machinery. The quality of the cordage and production of these factories could be improved to a great extent.

29. The Industrial Engineer who investigated this industry with a view to its further development visited all factories in Bombay. He has designed a machine worked by electric power for twisting and laying medium size cordage and fishing twine which increases production and produces a better quality of cordage. The machine was constructed and worked by the owner of a small cordage factory in Bombay who has reported favourably on its work. It produces considerably more cordage for the same labour than is possible by the old methods. Endeavours will be made to help this industry further during the next year.

PRACTICAL INVESTIGATIONS AND EXPERIMENTS FOR POSSIBLE NEW INDUSTRIES

(*a*) Tallow Substitute

30. Sizing is the most important process to which cotton yarns are subjected before being woven into finished cloth. A large number of substances are used for the preparation of proper size each giving its definite physical and chemical properties. Tallow is used for the purpose of softening the size and yarn. The textile mills of the Presidency, therefore, have to use imported tallow in large quantities.

The imports of tallow into the Presidency are as follows :—

—	Weight in cwts	Value in lakhs of rupees
1927-28	80,256	22·74
1928-29	64,142	19·40
1929-30	83,275	25·68

(Low figures for 1928-29 are due to prolonged textile mill strike in Bombay in 1928-29.)

Attempts have been made by several individuals and firms to find a proper substitute for the imported tallow for sizing purposes. As a result of these efforts some persons are manufacturing tallow substitutes. It has, however, been the opinion of some of the mills that tallow substitutes available on the market at present are not quite good and so unless a real substitute is produced the mills will have to use imported tallow.

The main difficulty in the present tallow substitute is that manufacturers are not producing a standard product and the product is not capable of being used for all types of work.

31. Taking into consideration these facts and the desire of some of the millowners to replace the animal tallow by a substitute made entirely from vegetable sources, this Department decided to take up the problem of producing a tallow substitute as one of its problem for investigation. The process used by those who are manufacturing a substitute at present consists in partially saponifying a thick viscous oil say castor oil, and thus turning it into a solid product more or less resembling the imported tallow in appearance.

It has, however, been found that a single oil turned into a tallow substitute by this method does not give very satisfactory results and so proper compounding of different vegetable oils available in this Presidency and turning them into a tallow substitute is being tried.

It was also thought that perhaps complete or partial hydrogenation of the mixed oils or some of the individual oils might give a product that can very well give a substitute for the imported tallow. A small hydrogenation plant has, therefore, been recently bought for the purpose and the experimental work is in progress. The Industrial Chemist, who has charge of this work, is of the opinion that the results so far obtained are satisfactory. The experimental work will be carried on during the next year for preparing a product that can be satisfactorily used in place of imported tallow for sizing purposes.

(*b*) China Clay

32. About 5 years ago the Geological Survey of India Authorities prepared a short report on the China clay deposits near Castle Rock on the M., & S. M. Railway. It is stated in the report that the analysis of raw China clay at Castle Rock compared favourably with the analysis of English or American raw China clay.

There are various uses of good China clay and large quantities of China clay are imported every year into this Presidency. The figures of imports for the last three years are as follows :—

—	Quantity in cwts	Value in lakhs of rupees
1927-28	459,865	15·97
1928-29	229,333	7·37
1929-30	436,800	12·94

Most of the China clay imported into the Presidency is used in textile mills for sizing purposes. During the last 10 or 12 years attempts have been made to produce good quality China clay which can be used for sizing purposes from local raw materials. Due to some reason or other these attempts have failed so far.

The Department, therefore, welcomed the opportunity it got for an investigation when the papers in connection with crude clay were received from Government in the Revenue Department and samples were received from the Chief Conservator of Forests. These samples were carefully refined by the Industrial Chemist after which they were shown to China clay dealers and their market value was ascertained. The dealers consulted were of the opinion that the clay prepared could be sold in Bombay without difficulty. From the data obtained in the laboratory approximate costs of production were worked out. The investigation has shown that the crude clay can be refined and then marketed at a price which will yield a reasonable return on the money invested. Before, however, a definite opinion is pronounced, it is necessary to carry out further work on semi-commercial scale. Proposals in this connection have been submitted to Government in the Revenue Department.

REPRESENTATIONS TO THE TARIFF BOARD AND GOVERNMENT

(*a*) Gold Thread Industry

33. The Government of India were pleased to direct the Tariff Board to make enquiries into the condition of the gold and silver thread and allied industries.

The Tariff Board came to Bombay in July 1930. With a view to give evidence in the interest of the industry detailed investigations were made by the Department and a written statement was submitted to the Board in September 1930. In the same month the Director was examined orally by the Board. In the written evidence the Department advocated an increase in the import duty to 50 per cent. *ad valorem* from 38 per cent. *ad valorem* then existing.

As the gold and silver thread industry is carried on partly as a cottage industry and partly on small factory lines, the Board felt great difficulty in getting any replies from the actual manufacturers. The Department consequently helped the Gold thread makers in preparing their representation to the Board. Later, the Industrial Engineer was specially deputed to Surat to accompany the Board with a view to showing the Board the actual state of the industry. The Board have generously acknowledged in its report the work of this Department in this direction. The chief recommendation of the Board to increase the import duty to 50 per cent. was accepted by the Government of India and a bill for the increase in import duty was duly passed in the last Assembly Session. It is hoped that with this increased duty the Industry will be in a position to make good progress.

(*b*) Sugar

34. The Government of India were pleased to direct the Tariff Board to make enquiries into the Sugar Industry. The Board came to Bombay

in July 1930. The Government of Bombay were requested by the Board to submit a formal statement of the grounds upon which the sugar industry in India required protection. The memorandum from the Tariff Board was forwarded to this Department and it was directed to submit a statement in question in consultation with the Director of Agriculture. That officer was accordingly consulted and a statement was submitted to Government. The Department stated that without protection from the imported low-grade sugar the gul industry of the Deccan may be expected to be jeopardized if not destroyed. Further, without protection from the imported high-grade sugar the nascent white sugar industry of the Deccan will not develop and grow.

The Department was of general assistance to the Board when in Bombay in getting in touch with the local dealers and makers of gul and other interested parties. The Director also tendered oral evidence before the Board.

The Board in their report to the Government of India have recommended an increase in the duty on imported sugar as follows : For the first seven years the duty should be fixed at Rs. 7-4-0 per cwt. and for the remaining period at Rs. 6-4-0 per cwt. The period of protection should be for 15 years. The duties should apply to all classes of sugar including sugar-candy.

Pending consideration of the report the Government of India have for revenue purposes increased the duty on sugar as follows :—

Sugar, crystallised or soft 23 Dutch Standard and above—Rs. 7-4-0 per cwt.

Sugar, crystallised or soft inferior to 23 Dutch Standard but not inferior to 8 Dutch Standard—Rs. 6-12-0 per cwt.

Sugar below 8 Dutch Standard and sugar-candy—*ad valorem* 25 per cent. plus Rs. 2-12-0 per cwt.

There can be little doubt that the increased rate of duty on sugar of all classes will give a good fillip to the sugar industry in the country.

35. In view of the above, it may be stated that it is very important that early steps should be taken to investigate as to what should be done to encourage the establishment of sugar factories in this Presidency. A representation has in this connection been made to the Government of Bombay by this Department.

(c) Match Industry

36. The Director General of Commercial Intelligence and Statistics, Calcutta, consulted this Department regarding the alleged unfair rate war in the local match industry. The whole question was investigated by the Department at great length and a detailed report was submitted to that officer.

A representation on the subject was also submitted by this Department to the Government of Bombay.

(*d*) Cess on Hides

37. At the request of the Government the report of the Hides Cess Enquiry Committee was very carefully considered and the views of the Department on it were submitted. The Department put forward a strong case for getting a fair share from the proposed cess fund for this Presidency with a view to its utilisation for the improvement of the industry in general.

INVESTIGATION OF POSSIBLE NEW INDUSTRIES AND PREPARATION OF ESTIMATES

38. An appreciable number of requests were received from small investors for detailed estimates for small scale factories which would pay a reasonable return on the capital invested. To meet these requests as well as to be able to bring to the notice of investors suitable industries a number of estimates mentioned here below were prepared. The estimates contain details of machinery, raw materials required, capital cost, running capital required, staff necessary, cost of manufacture and likely return on the investment, etc.

The estimates have been in good demand and seem to be greatly appreciated.

39. **Hosiery Manufacture.**—Hosiery manufacture in the Bombay Presidency has not been adequately developed. There is still a large field for the expansion of this industry.

At present there are about 20 factories in the presidency situated mostly in Bombay and Ahmedabad which manufacture annually Rs. 16 to 17 lakhs worth of cotton hosiery. Over and above this, India imported in 1929-30 Rs. 144 lakhs of cotton hosiery of which Bombay's share was Rs. 26 lakhs. It is obvious that there is a considerable scope for the development of this industry. The possibilities of same have been carefully investigated by this Department and complete estimates have been worked out for 5 different sizes of knitting factories requiring investment as follows :—

No.	Block capital	Working capital	Total capital
	Rs.	Rs.	Rs.
1	4,800	4,200	9,000
2	6,800	5,700	12,500
3	12,500	9,500	22,000
4	52,000	26,000	78,000
5	1,00,000	45,000	1,45,000

40. **Manufacture of Envelopes.**—Almost all envelopes consumed in this Presidency and Sind are imported. There are no statistics available of the total value of the imports of envelopes as these are not separately recorded. That the imports are of a considerable value there is no doubt. Bombay manufactures a negligible quantity of envelopes which is mostly done by hand by small printers and jobbers. There is no specially equipped factory for manufacturing envelopes on a small scale. In order to suit small investors a detailed estimate of an envelope factory has been prepared and brought to the notice of some inquirers.

41. **Manufacture of shoe laces.**—There are no statistics available of the total imports of shoe laces into the Bombay Presidency and Sind. There is not a single factory for the manufacture of shoe laces in this Presidency. A suitable scheme for small investors with a capital of Rs. 8 to 9 thousand was investigated and a complete estimate for the manufacture of shoe laces was drawn up.

42. **Slate and Slate-pencil manufacture.**—Bombay Presidency's present estimated consumption of school boy slates annually is 25,000 to 30,000 cases of the value of Rs. 2½ to 3 lakhs. There is also every likelihood of the consumption of school slates increasing with the increase of primary education. There are only two hand manufacturing slate factories which are just sufficient for the demand of their surrounding districts in the Presidency proper. But there are no factories with automatic power-driven machinery for the manufacture of slates and slate pencils in the Bombay Presidency to supply the present or future demand of school slates. A complete scheme has been prepared containing details of necessary machinery, raw material supplies, expenditure and costs of manufacture for a total investment of block and working capital of Rs. 60,000.

43. **Biscuit manufacture.**—In order to investigate the development of this industry several biscuit factories were visited to find out the total output when compared with the total consumption of this Presidency and Sind. The present approximate outturn of the biscuit factories in Bombay equipped with machinery is approximately 900,000 lbs. of biscuits per annum. The total maximum capacity of these factories is 3,400,000 lbs. per annum which was found to be very much in excess of the present demand or the likely demand in the near future of this Presidency. The imports in 1929-30 for Bombay were of the value of Rs. 9·5 lakhs and the Karachi imports brought this figure up to Rs. 15·6 lakhs. There appears to be no scope for the addition of further biscuit factories in the Presidency proper. But in Sind there are possibilities for such factories to supply the local demand as well as demand of the neighbouring provinces and a detailed estimate for a small factory has been prepared.

44. **Manufacture of Disinfectants.**—Bombay Presidency imports annually about Rs. 4 lakhs worth of disinfectants. There are several firms in Bombay who manufacture liquid disinfectants and disinfectant powder. Still the imports show that there is a good field for the industry especially in the mofussil. The Department, therefore, investigated the problem and prepared a detailed estimate for a small plant which would require a total capital of Rs. 12,000 for the manufacture of disinfectants.

45. **Soap manufacture.**—The consumption of soap of various types in the Presidency is very great and is increasing day by day. It is, however, very hard to estimate the total consumption of soap in the Presidency. There are several small as well as big soap works in the Presidency, but the imports of soap into the Presidency which amount to about Rs. 78 lakhs per year, indicate that there is a good field for the development of soap industry. The possibilities of development of the industry were, therefore, investigated by the Department and a detailed estimate for a plant requiring a capital of Rs. 60,000 has been worked out.

46. **Match manufacture.**—The Bombay Presidency produces matches in excess of its requirements. There are, however, no match factories in Sind and due to its favourable geographical position as a distributing centre for the Punjab, Afghanistan, Baluchistan and Persian Gulf as well as due to its favourable climatic condition for the match industry, the prospects for at least one match factory in Sind are fairly good. Complete and detailed estimates for match factories producing 1,000 gross and 500 gross match boxes per day were therefore prepared and made available to some interested parties.

47. **Manufacture of tinctures, liquors and medicinal spirits.**—The Presidency imports from foreign countries about Rs. 17 lakhs worth of medicines and other preparations dissolved in alcohol or rectified spirits. The demand for tinctures and rectified and medicinal spirits is increasing day by day. There is a special concession in the Excise duty for preparing these preparations. These have, therefore, to be prepared in a bonded laboratory under the vigilance of the Excise Authorities. A detailed estimate for a bonded laboratory requiring a capital of about Rs. 35,000 for the manufacture of tinctures, etc., has been worked out.

48. **Manufacture of canvas shoe cleaner.**—The demand for canvas shoes is increasing very rapidly in this Presidency. The Presidency imported during 1929-30 11·18 lakhs of pairs of rubber soled canvas shoes while in 1930-31 it imported nearly 19·10 lakhs of pairs. Naturally, therefore, there is a great demand for a canvas shoe cleaner like say "Blanco" a China clay product which is to be supplied to keep the shoes white and clean. A detailed estimate for a small establishment

requiring a capital of about Rs. 3,000 for the manufacture of canvas shoe cleaner was, therefore, prepared and has been made available to interested parties.

SOLVING OF PRACTICAL DIFFICULTIES IN THE PROCESSES OF MANUFACTURE

49. Apart from the work of the improvements in technical processes in the gold thread and rope making, etc., industries, to which a reference is made elsewhere a number of requests were received in the Department for assistance in the solution of practical difficulties. The more important of these are briefly summarised hereunder :—

(*a*) A newly started glass bangle factory experienced difficulty in getting smooth and uniform joints in their glass bangles. The Industrial Chemist visited their factory and carefully investigated the problem and recommended the use of petrol gas. A practical demonstration in making joints was given to the Technical Expert of the factory by the Industrial Chemist in the Royal Institute of Science Laboratory. In this Institute, however, there is no petrol gas available. One of the Poona Colleges has the necessary equipment and therefore practical demonstration was given at this College in Poona. The Technical Expert of the Company is convinced that the process suggested by the Industrial Chemist gives the finish, etc., to the bangles exactly like that of the imported ones. The factory has accordingly ordered out the necessary equipment. The assistance has been greatly appreciated by the proprietors.

(*b*) One of the local confectionery manufacturing companies experienced the following difficulties :—

(1) Proper colour of extra strongs manufactured was not obtained.

(2) Sugar choked the mill and so the desired fineness was not obtained.

(3) Coating machines did not give full output.

The Industrial Chemist visited the factory and investigated his difficulties and necessary advice was given which enabled the factory to overcome their difficulties.

(*c*) A local Hosiery Company had some difficulties in connection with the manufacture of mantles, chief of which was the difficulty pertaining to the actual impregnating of the salts into the woven mantles. A formula for the preparation of impregnating solution was supplied to the company. They also experienced difficulties in procuring proper chemicals some of which are not only not available in Bombay but it is almost impossible to obtain them from abroad due to the control of the gas mantle chemicals by an international combine of mantle manufacturers. Substitutes were therefore prepared in the Laboratory

from materials available locally and were supplied to the firm. The method of making them was also demonstrated. These substitutes worked to their satisfaction.

(*d*) An ink manufacturer of moderate means experienced practical difficulty in the process of manufacture. He also wanted to know how to dispose of the acrolein which is produced in the boiling of oil which is used as a vehicle for the ink. The necessary advice was given to him together with a sketch of the arrangement to be adopted.

(*e*) A firm in Karachi forwarded a sample of their tooth paste to this office. The Industrial Chemist of this Department tested the sample and pointed out the defects in it. He also suggested some improvements in the proper mixing of the various ingredients used by the firm.

(*f*) A gentleman from Sholapur experienced some difficulties in the manufacture of bar soap particularly with regard to adulterants and a particular shade of colour which is to be found in imported soap. The gentleman was supplied with the necessary information together with a note on the manufacture of rosin soap.

(*g*) A local dye works experienced difficulty with their steam recorder and requested that the Industrial Engineer of this Department who had considerable experience in these recorders may help him. The Industrial Engineer visited the factory and advised the parties concerned. A detailed report in the matter was also submitted to the enquirers.

(*h*) A local motor works had a case-hardening furnace built by a contractor firm. This furnace did not function properly and the help of the Department was requested. The Industrial Engineer inspected the furnace and pointed out the defects. The Company was instructed how to allow more air to the burner and how to baffle hot gases towards the chimney. The company followed the advice and acknowledged with thanks the assistance received.

(*i*) A local factory had some difficulty in the matter of putting further load on their Diesel Engine. The Industrial Engineer visited the factory and a report was submitted showing that a certain additional load would create no working difficulties. It was pointed out that it will be necessary to cool the engine room before putting on the extra load. A sketch showing a ventilating arrangement which would work satisfactorily both in regard to cooling the atmosphere as well as giving the engine a cooler and better-conditioned air supply was supplied.

(*j*) The proprietor of a ginning and pressing factory in Malegaon experienced considerable difficulty with the work of his boiler owing to the hardness of the local water. He requested that the Department should advice him as to how to get over the difficulty. A detailed scheme with the necessary sketch showing Settling Tanks was supplied to him. He was also advised as regards the chemicals to be used for softening the water.

(*k*) Proprietor of a small Power-driven loom factory in Surat had difficulties with his gearing and shafting which caused vibrations to the roof structure. The Industrial Engineer when in Surat visited the factory, investigated the matter and designed a suitable arrangement by the use of which the trouble in question would not occur.

COMMERCIAL AND INDUSTRIAL INTELLIGENCE

50. This branch of the Department continued to be both popular and useful.

As usual inquiries from abroad for opening commercial relationships with Indian firms were transferred to the Director General of Commercial Intelligence and Statistics, Calcutta. Inquiries from Indian firms for opening trade relationships with British firms were transferred to H. M. Trade Commissioner, Bombay.

Inquiries received and dealt with in this office may be divided into the following groups :—

(*a*) Statistical, i.e., asking for figures of imports and exports of raw materials as well as finished goods.
(*b*) Names of dealers in and sources of raw materials.
(*c*) Names of Indian manufacturers of various articles.
(*d*) Enquiries covering standing, etc., of firms.
(*e*) Miscellaneous.

Under groups (*a*), (*b*), (*c*) and (*e*) 234 inquiries were received and answered.

Under group (*d*) six inquiries were received for supply of information regarding financial standing and particulars of firms, etc. Of these, one was from the Director of Industries, Madras, one from the Director of Industries, Bihar and Orissa, one from Stores Purchase Officer, U. P., Cawnpore, one from the Director of Agriculture, Poona, one from the Director of Contracts, Army Headquarters, and one from an upcountry firm. Information was collected and supplied.

MINES AND MINERALS

51. The Department collected during the year the necessary statistics from the various Collectors and submitted a consolidated return to Government covering the Act and Non-Act mines in the Presidency. The position revealed by the statistics collected was as follows.

During the year ending 31st December 1930, nine applications for prospecting licenses and mining leases were disposed of. Of these, five were for Manganese ore, two for Chrome ore and two for Bauxite ore.

During the same period, one bauxite mine was worked in the Presidency. The total quantity of mineral raised was 719 tons and the value at the pit's mouth of the same was Rs. 5,752. Similarly six manganese mines were worked in this Presidency during the same year with a total production of 43,398 tons valued at Rs. 3,74,385 at the pit's mouth.

Different mines realised different prices at the pit's mouth but the average price per ton at the pit's mouth was Rs. 8-10-0.

The Department dealt with a number of enquiries received from the public including two from foreign consuls in Bombay in connection with minerals, places of their occurrence, firms dealing in them, etc.

A Bombay firm was recommended for a certificate of approval to prospect for minerals in the Madras Presidency. Two other Bombay firms were given general advice about mining possibilities in two Indian states in which they were interested. Government in the Revenue Department sent to this Department a sample of mercury ore containing free mercury found in the East Khandesh District for the purpose of determining if it would be worth while to refer the matter to the Director of Geological Survey. The ore was analysed and a preliminary report was submitted to Government.

The Chief Conservator of Forests and Government in the Revenue Department sent to this Department samples of Kaolin found in Castle Rock for the purpose of determining the possibilities of the commercial exploitation of the deposits. A detailed reference to this is made elsewhere in the report.

FISHING INDUSTRY

52. The only grant available under this heading was Rs. 1,000 for Oyster Culture in Sind. This work continued to be in charge of the Collector of Customs, Karachi.

Work of a general character was, however, attended to by this Department.

The Collector of Salt Revenue, Bombay, forwarded to this office two samples of sardine oil extracted by a gentleman in Majali with a request to see whether the same could be decolourised and deodourised. The samples were treated by the Industrial Chemist of this Department in his laboratory in the Royal Institute of Science, Bombay, and it was found that a clear golden-coloured oil can be obtained from them. This Department has asked for 10 lbs. of samples of each sort from the gentleman at Majali with a view to see whether it will be a commercially successful proposition to decolourise and deodourise the oil. The samples are awaited, and when received, the work will be taken in hand.

STATE-AID TO INDUSTRIES

53. During the year under review, two applications for state-aid to industries were received. One applicant was asked to supply details such as the security he would offer and the interest he would pay, but he has not replied so far. The other application was from a firm to whom a loan had been previously refused. This time the firm requested for half the sum asked for before. The application was once again very carefully considered. As, however, no new points were raised which would make possible a revision of the previous decision the application was rejected.

CHAPTER III

WORK OF THE DEPARTMENT—COTTAGE INDUSTRIES

54. Cottage industries occupy a very important place in the national economy of India. It is estimated that nearly 90 per cent. of the industrial workers of India are engaged in cottage industries. So far as this Presidency is concerned, hand weaving industry is its most important single cottage industry. There are something like 990 centres where this industry is carried on and it is estimated that there are some 100,000 hand looms in the Presidency. A rough estimate would place the value of production of cloth by hand looms in this Presidency at some 4·5 crores of rupees. The Department concentrated its attention, therefore, chiefly on this and its allied industries. Improved appliances were popularised. A fly shuttle loom gives some 50 per cent. more production than a hand throw-shuttle loom. A large number of weavers turn out cloth which can be woven on fly shuttle looms. It is obvious, therefore, that if anything like a majority of such weavers were to be persuaded to adopt fly shuttle looms, value of production would increase by probably more than a crore of rupees per annum. Apart, therefore, from the point of view of helping a very poor class of industrial worker—the weaver—the expenditure incurred on this section of the work of the Department can be more than justified by the larger interests of the country which will be served by increased capacity of the industry to meet the local specialised demand.

The Department's work in this direction is described in the succeeding paragraphs.

The other cottage industry which received some attention of the Department was that of production of Art-Crafts. In this connection no practical demonstrations were made—artistic hand weaving and cloth printing excepted—but negotiations were in hand for helping these industries to come in touch with wider markets than is the case at present.

PRACTICAL DEMONSTRATIONS OF IMPROVED APPLIANCES

55. The Department, as usual, carried on its propaganda work of introducing improved implements and modern methods in weaving, dyeing and calico-printing amongst the weavers, dyers and calico printers through its peripatetic weaving schools, weaving and dyeing demonstrations.

56. **Weaving Schools for bona fide weavers.**—Peripatetic Weaving Schools were maintained at different places in the Presidency and Sind, during the year under review and they were transferred from one place to another as found necessary. During the year under report the Department had under its control 7 weaving schools for *bona fide* weavers which

were conducted at the places shown below with number of looms introduced by them mentioned against each :—

Division	Place	District	Number of Fly-shuttle Looms introduced
Southern Division ..	Gajendragad ..	Dharwar ..	21
„ „ ..	Lakkundi ..	„ ..	..
Central Division ..	Dharangaon ..	East Khandesh ..	123
„ „ ..	Bhingar ..	Ahmednagar ..	72
„ „ ..	Satana ..	Nasik ..	32
„ „ ..	Nasik ..	„ ..	10
Northern Division ..	Surat ..	Surat ..	7
Sind ..	Hala ..	Hyderabad ..	51
„ ..	Nasarpur . ..	„ ..	10

The Weaving School at Gajendragad was opened there in 1926 and it being an important centre was continued there till October 1930. After its work was finished it was transferred to Lakkundi, a village in the Dharwar District, in November 1930 where it has now become popular. Special experiments in tan and topa weaving are being conducted in this School and it is expected that the same will be completed soon with success.

The Satana Weaving School having finished its work was transferred to Nasik in the last week of February 1931 where it aroused considerable interest amongst the local weavers from the beginning and in the short period of about a month under review it introduced 10 looms there. It is hoped that the School will be a success at this place.

The Surat Weaving School was, looking to the importance of the centre, continued there so far. It has finished its work there and is being transferred to another suitable centre.

The Weaving Schools at Hala and Nasarpur in Sind have been very popular. They were opened only last year and during the year under report they have shown marked progress in the introduction of Fly-shuttle looms. Weavers of neighbouring places also were attracted by the Schools.

Mr. A. I. Shaikh, Weaving Assistant, on duty in Sind specially introduced weaving of marketable cloth at these places, e.g., Honey-comb towels, Napkins, Dusters, Chaddars, Bed-sheets, Table cloths, Turbans with artificial silk yarns, shirtings, etc., plain and with up-to-date designs

which aroused considerable interest. The introduction of dobby work played an important part in the progress of the Schools.

It may be of interest to note here that when the Department first organised weaving section in Sind there were no Fly-shuttle looms and the Schools started their work on the looms taken from Surat and other places in the beginning. But as the weavers began to adopt the Fly-shuttle looms, local carpenters began to manufacture same under the supervision and guidance of the Weaving Assistant. The prices were in the beginning somewhat high but through the efforts of the Weaving Assistant they are reduced considerably and looms are now manufactured at Hala, Nasarpur, Lakhi, Lahori and Larkana according to the prevailing demand. Some wood-turners also started manufacturing pirns and bobbins as used in the schools and they are now manufactured in sufficient quantity to meet the local growing demand. Thus, in addition to the revival of the Hand Weaving Industry the Weaving Section in Sind has made an opening for another cottage industry, viz., the manufacture of looms, pirns and bobbins.

A cot-tape loom was locally prepared and put in working order at Hala Weaving School with a view to introduce same amongst the weavers. It has aroused considerable interest amongst the weavers there. If its demonstration proves successful, it is hoped to equip all the institutions in Sind with one such machine.

Demonstration of Dobby work was successful during the year and about 116 dobbies were introduced among the weavers by the various Weaving Schools.

57. **Weaving Schools for Agriculturists.**—These schools are run exclusively for agriculturists with a view to train them in hand weaving as a subsidiary industry. In the beginning no scholarships and prizes were given in such schools. Government were, however, pleased to sanction these recently. This step greatly helped to make the Schools popular. The Weaving School maintained for them at Balganur, District Dharwar, trained 13 agriculturists during the year and introduced 7 Fly Shuttle Looms.

Some more looms are expected to be in working order shortly. The question of transferring this School to another centre is under consideration.

As reported last year the Weaving School for *bona fide* weavers at Broach was converted into a Weaving School for Agriculturists in the Northern Division during the year under report. Eight agriculturists first joined the school and finished their course in six months as required. Five of them set up their own looms. Another batch of 7 students joined the school in November 1930 which is still receiving training. They also, it is expected, will set up their own looms when they leave the School.

Special arrangements are now made to give training to both the past and present students of the School in designing, sizing and peg warping in addition to the prescribed course. The school is becoming popular.

58. **Weaving Demonstrations.**—In addition to the Weaving Schools mentioned above the Department maintained during the year under report 11 peripatetic weaving demonstrations in the Presidency and Sind, which were transferred from one place to another as found necessary. These institutions were conducted at the following places and they introduced the number of Fly-shuttle looms mentioned against each :—

Division	Place	District	Number of Fly-shuttle Looms introduced
Southern Division ..	Tuminkatti ..	Dharwar ..	3
,, ,, ..	Hosritti ..	,, ..	11
,, ,, ..	Gudur ..	Bijapur ..	59
,, ,, ..	Kaladgi ..	,, ..	2
,, ,, ..	Chikodi ..	Belgaum ..	39
,, ,, ..	Bhoj ..	,, ..	6
Central Division ..	Vita ..	Satara ..	1
,, ,, ..	Karad ..	,, ..	10
,, ,, ..	Varangaon ..	East Khandesh ..	63
,, ,, ..	Javla ..	Sholapur ..	11
,, ,, ..	Nateputa ..	,, ..	14
Northern Division ..	Chikhli ..	Surat ..	..
,, ,, ..	Alipur ..	,, ..	2
,, ,, ..	Alindra ..	Kaira ..	3
,, ,, ..	Undhela ..	,, ..	2
,, ,, ..	Uttersanda ..	,, ..	7
Sind ..	Lahori ..	Larkana ..	17
,, ..	Lakhi ..	Sukkur ..	14

Dobby work was introduced by the Lakhi and Lahori Demonstrations this year on the lines of Demonstrations in other divisions. The Demonstrations mentioned above introduced about 110 dobbies.

The weavers of Lakhi entertained some doubt about the superiority of the fly-shuttle loom over the old type throw shuttle loom. A competition was, therefore, arranged by the Weaving Assistant, Sind, amongst the local weavers. One weaver was equipped with a fly-shuttle loom and the other with a hand throw shuttle loom. Same count of yarn was used on both the looms. The test lasted for 7 hours with an interval of 1 hour. Susi cloth measuring 9 yards 17 inches was produced on the throw shuttle loom whereas cloth measuring 14 yards 8 inches was produced on the fly-shuttle loom. The test was attended by a good number of local weavers,

who were convinced that the fly-shuttle loom can yield about 50 per cent. more production than the hand throw shuttle loom.

59. **Cottage Sizing Set Demonstration.**—A cottage sizing set demonstration was conducted at Parola (district East Khandesh) in the beginning of the year. It became popular there. It was then transferred to Dhulia in August 1930. About 250 weavers visited the demonstration to see the work of the machine and 12 weavers practised on it and received instructions in working it. As a result of the demonstration of the machine at Parola and Dhulia 2 machines were introduced during the year under review. Arrangements are in progress to transfer the institution to another suitable centre.

60. **Wool Weaving Demonstration.**—This demonstration was conducted at Hukkeri till October 1930 where it was popular. It was then transferred to Benchimardi in Gokak Taluka (district Belgaum) where it aroused considerable interest. The wool weavers were spinning their wool on a takli or an ordinary hand-charka and consequently the outturn was very low. A treadle charka was therefore supplied to the demonstration in November 1930. This machine gives 75 per cent. more outturn than the takli and the wool weavers are keenly interested in the machine. It is hoped that in the near future weavers will adopt this machine also along with fly-shuttle looms. The Demonstration did useful work at Hukkeri and Benchimardi and introduced 6 looms at the former place and 4 at the latter.

61. **Introduction of beam system in hand-weaving.**—A reference was made to this system in the Report of last year under paragraph 27. The system is growing popular and steadily meets with success. As a result of the demonstrations of this Department 28 beams were introduced at Dharangaon and 12 at Varangaon in the Central Division during the year under report.

62. **Dyeing Demonstrations.**—Two dyeing demonstrations were maintained during the year under review with a view to train dyers, calico printers and others in the improved methods of dyeing and calico printing. One demonstration was conducted in the Presidency proper and the other was located in Sind. The former worked at Hubli, Dharwar and Gadag where it aroused great interest and did very useful work as shown below :—

(1) In the beginning of the year under report the demonstration was located at Hubli. The salient features of the work carried out at this place were the improvements effected in the existing processes of silk and cotton dyeing followed by the local dyers and weavers. Two dye-houses were opened under the supervision and guidance of the Demonstrator—one for the Southern Division Weavers' Co-operative Union Ltd., Hubli, and the other for Mr. G. S. Patel of Hubli. The former started its work from April 1930 and the latter from October 1930.

The local dyers and weavers carrying on their trade individually were doing their work in a crude manner by primitive processes and met with various difficulties in their work. The work turned out by them was not satisfactory. Large quantities of dyed yarn were, therefore, imported from places like Bangalore, Bagalkot, Sholapur and Belgaum. The processes followed by the local weavers and dyers were, therefore, completely overhauled and modern processes were demonstrated and explained to them in detail. The importance of the institution was appreciated and a good number of them began to attend the demonstration regularly. This benefited the weavers and dyers to the extent that they now import only raw silk instead of dyed silk and dye it to the required shades and quality themselves.

When the silk dyeing by modern methods gave them satisfaction, the weavers and dyers turned their eyes to cotton dyeing. Grey and dyed cotton yarn was imported from Ahmedabad, Broach, Petlad, Bombay, Sangli, Gokak, Gadag, Rabkavi, Madura, Madras and Bangalore. The Southern Division Weavers' Union arranged to supply dyed yarns from its recently started dye-house to the weaver members and non-members to their requirements. Some local weavers and dyers themselves took training at the Demonstration. During its stay for about 7 months the Demonstration trained 71 persons in the improved method of silk and cotton dyeing and helped to open 2 small dye-houses. People from Gadag, Belgaum, Kittur, Guledgud and Dharwar also attended the Demonstration at Hubli from where it was transferred to Dharwar in October 1930.

(2) At Dharwar the Demonstration aroused considerable interest amongst the local dyers and weavers who began to attend the Demonstration regularly. There were some 3 to 4 indigo dyers at Dharwar who met with various difficulties in their work. They were given the necessary assistance so as to enable them to do their work smoothly. The small Indigo Dye-house of the Weavers' Society was suffering for want of a trained man to conduct it. Training was given to a suitable man who it is expected will be able to do the work independently in the near future. Individual weavers and dyers attended the demonstration in a good number regularly and picked up the art. Persons from Uppinbetgeri, Avarsa, Gudi-Angade, Shahapur, Belgaum and Shivapeth also attended the Demonstration. They were all given practical training in modern methods and some 18 persons completed their training in the demonstration and are able to work on their own satisfactorily. Four small dye-houses were opened at Dharwar during the year under report under the supervision and guidance of the Demonstrator.

(3) The Demonstration participated in the All-India Swadeshi Industrial Exhibition, Gadag, from 25th January to 9th February 1931.

During its stay at Gadag dyers and weavers visiting the Demonstration took good advantage of the institution by regularly attending the demonstration. About 30 persons thus received training in both cotton and silk dyeing by modern methods. The Demonstration was appreciated by the visitors to the Show.

The work of the Demonstration at Hubli, Dharwar and Gadag was satisfactory. The institution continues to do useful work under Mr. D. V. Datar, Senior Dyeing Demonstrator of this Department.

63. **Dyeing Demonstration in Sind.**—The Dyeing Demonstration located in Sind continued its work at Tatta and more attention was paid during the year under report to calico printing. The demonstration was well attended and several weavers and dyers picked up the improved methods in calico printing with keen interest and started their work on their own. After sufficient training and practice two persons opened dye-houses on a small scale and one started calico printing works on a small scale. The demonstration was well-attended by dyers, printers and weavers.

A detailed estimate was supplied to a leading dyer of Tatta who wanted to open a dye-house to dye 40,000 lbs. of yarn per month and he was given all assistance he required. During his visit to Hyderabad on duty the Demonstrator explained to one dyer improved methods in Indigosal printing with practical demonstration with a view to enable him to carry on his work well.

The Demonstration was transferred from Tatta to Tando Allahyar where it aroused considerable interest amongst the local dyers and weavers who attended the demonstration in good number. More than 20 persons received complete training in improved methods and some of them are likely to open small dye-houses of their own in the near future. The introduction of modern methods in printing has aroused considerable interest. Facilities are provided for those unable to attend the Demonstration during day-time on account of other work, to attend it in the evening. The Demonstration continues to be popular and people from Hoosri, Shikarpur, Manju, Zirkan, Chanbur and Badin attended it to learn modern methods. Arrangements are in progress to transfer it to another suitable centre.

64. **Government Hand Weaving Institute, Poona.**—This Institute was organised, as reported in the last Annual Report, in the year 1930. It started its regular work from June 1930. It has two courses—Advanced Course extending over a period of 2 years and Artisan Course extending over a period of 1 year. A number of scholarships are open for award to deserving students and 9 students availed themselves of these scholarships in 1930-31.

During the year under report, 16 boys attended the Advanced Course (1st year), that is one more than the maximum number allowed for. Seven students attended the Artisan Course as against 10 provided for. The working of the Institute during the year was satisfactory.

INVESTIGATION INTO THE CONDITION OF HAND WEAVERS

65. The investigation in connection with Hand Weaving Industry detailed on pages 29–32 of last year's report was carried out further in the following centres :—

Northern Division ..	.. Surat, Broach and Chikhli.
Central Division ..	.. Sholapur, Parola, Dharangaon, Dhulia, Chandor, Satana, Malegaon, Kharda and Bhingar.
Southern Division ..	.. Dharwar, Hubli, Belgaum, Gajendragad and Lakkundi.
Sind ..	.. Hala, Nasarpur, Lahori and Lakhi.

Last year it was mentioned that owing to severe mill competition and trade depression the wages of weavers had gone down in almost all the weaving centres. This year it was found that the wages of weavers had registered a further drop practically everywhere. There was a drop in wages of handloom weavers in 1928 and again in 1929. The wages decreased by 16 to 50 per cent. in 1930 as compared to the wages earned in 1927. Even the reduced wages could not be earned regularly and continuously because the merchants dealing in hand-made articles were not placing orders as in normal years. This state of things may be ascribed to the fact that the agriculturist who is the hand weaver's best customer was not buying as he did in normal years owing to the fall in commodity prices. The previous reductions in wages were chiefly ascribed to mill competition. The 1930 drop is also no doubt partly due to the continued severe competition from the mills, but the crippled purchasing power of the agriculturist is its chief cause.

Thus, the bulk of hand weavers are in a very poor economic condition and help is urgently required in the following directions :—

(*a*) Training of suitable men who may organise the handloom industry on a factory basis.

(*b*) Introduction of improved appliances.

(*c*) Assisting the handloom weavers to weave cloths which do not come in direct competition with mills. Helping weavers to standardize their production in connection with width, length, design, quality, etc.

(*d*) Helping the people concerned to organise in each of the large handloom centres one or more small factories for sizing the yarn and supplying same in warps to weavers and for calendering and finishing cloths produced on handlooms.

(*e*) Helping weavers to find markets for their finished products beyond the restricted areas to which they now have access.

So far as work under heading (*a*) is concerned, it is hoped that the first batch of students in the Advanced Course of the Government Hand Weaving Institute, Poona, who will come out successful in 1932 will undertake this work.

As regards heading (*b*), this Department is concentrating its attention on the introduction of improved appliances by means of weaving schools and demonstrations.

In the absence of a Textile Expert and lack of funds it has not been possible to undertake work systematically in the other directions mentioned in headings (*c*), (*d*) and (*e*).

ART-CRAFTS

66. In last year's report I had suggested that assistance may usefully be rendered to art-ware workers by enabling them to have access to wider markets than at present. During the year under report negotiations were in progress for the establishment by private enterprise, with some Government help, of a Central Art-Crafts Sales Bureau in Bombay. This institution will help to establish the much-needed contact between the city purchasers and the village workers. It will also make it possible for this Department to introduce the Bombay art-wares in the European and American markets.

67. The articles referred to in paragraph 31, page 28 of last year's report were prepared during the year under review at the Reay Art Workshops, Bombay, and despatched to the High Commissioner for India in London in two consignments in the months of September 1930 and March 1931. It is hoped that the exhibits besides proving valuable additions to the Exhibition Hall of the New India House, Aldwych, London, will also result in the general appreciation of the Bombay art-crafts which would ultimately be of considerable help in the building up of a foreign trade in Bombay art-wares.

CHAPTER IV

TECHNICAL AND INDUSTRIAL EDUCATION

68. During the year under report the work of the Department under this head was in the following directions :—

(*a*) Award of technical scholarships tenable in India.

(*b*) Obtaining of facilities for practical training for suitable candidates, etc.

(*c*) Control of peripatetic weaving, sizing and dyeing demonstrations and the newly organised Central Hand Weaving Institute at Poona described in the previous paragraphs.

(*d*) Rendering of advice in connection with establishment of technical schools to public bodies.

SCHOLARSHIPS TENABLE IN INDIA

69. **Technical Chemistry Scholarships.**—Three new scholarships for research work in technical chemistry, tenable in India, were awarded during the year. Out of these, two scholars joined the Royal Institute of Science, Bombay, and one the Indian Institute of Science, Bangalore. The three scholarships granted in 1929 were extended for another year. The scholarship of one of the scholars at the Indian Institute of Science, which was awarded in 1928, was further extended for the third year as a special case.

70. **Work of the scholars at the Indian Institute of Science, Bangalore.**—One of the scholars at this Institute carried on investigation on Amylase from wheat and studied the influences of various factors on the activity of wheat amylase. Another scholar worked on the synthesis of Cantharidin and its derivatives. Another scholar worked on the hydrogenation and purification of vegetable oils.

71. **Work of the scholars at the Royal Institute of Science, Bombay.**—One of the scholars continued his work on the synthesis of Dikelo Cyclobutane derivatives. The other scholar also continued his work on the determination of absorption coefficients of jels of silicic acid formed in acidic and alkaline mixtures of sodium silicate and ammonium acetate. At the suggestion of the Principal the two new scholars of this Department at the Royal Institute of Science worked under the direct guidance of the Industrial Chemist of this Department on industrial subjects such as (*a*) producing a tallow substitute from vegetable oils for textile mills, (*b*) refining of China clay, (*c*) preparation of Pyrotechnic sparklers, (*d*) isolation of fruit acid from Adansonia Digitata commonly known in Marathi as Gorakh Chinch fruit, and (*e*) composition of the rejected solution from electro-plating baths in the gold thread industry.

72. **Electrical Engineering Scholarships.**—Two new scholarships for practical experience in Electrical Engineering were awarded during the year under report. One of the scholars joined the B. B. & C. I. Railway and the other the G. I. P. Railway Electrical shops. The scholarships in Electrical Engineering sanctioned in 1929 were terminated during the year as they had been awarded for one year only.

FACILITIES FOR PRACTICAL TRAINING, ETC.

73. A number of requests were received from students for advice and help. Students who wanted information about Technical Institutions abroad were referred to the University Bureau. The necessary advice about technical courses in India was given in a number of cases. Arrangements were also made in a few cases for facilities for practical training in India in Match and Textile Industries and Electrical Engineering.

INDUSTRIAL EDUCATION

74. The Department controlled the various peripatetic cotton weaving, wool weaving and dyeing institutions described in the previous Chapter. It also organised and controlled the newly-opened Hand Weaving Institute which was described in the last year's report. The work of this Institute as well as that of the peripatetic institutions mentioned above was satisfactory.

ADVICE TO PUBLIC BODIES

75. Requests are received from public bodies sometimes for advice about establishment of Technical Schools. Two instances of such help are given below—

(1) A complete scheme for opening a Technical School at Karachi was prepared at the instance of the President, Karachi Municipality, and was submitted to him. The following courses were suggested :—

(i) Mechanical Engineering for training skilled mechanics and second class engineers.

(ii) Electrical Engineering for training of electricians and electrical wiremen.

For both the courses a period of four years has been suggested. It is understood that the Municipality is considering the scheme.

(2) A detailed scheme for an Industrial School at Bombay was prepared. The object of the school is to train from a young age boys of poor parents, both working and middle classes, to become efficient skilled workmen and craftsmen and at the same time to acquire general education. The following trades have been suggested : spinning, weaving, dyeing, printing, mechanical engineering work, boot and shoe making, tanning, biscuit and bread making, etc. The scheme was drawn up at the instance of a local philanthropist.

AIDED INDUSTRIAL AND TECHNICAL SCHOOLS

76. I maintained touch with Industrial and Technical Institutions by my membership of the Committee of Direction for Technical Education and Board of the Victoria Jubilee Technical Institute, Bombay.

CHAPTER V

WORK OF THE DEPARTMENT—MISCELLANEOUS

77. In the previous chapters the work of the Department in connection with organised industries, cottage industries and Technical and Industrial Education has been dealt with. The Department does quite an appreciable amount of work which cannot be properly included under any of the above heads, and yet is of sufficient importance to be noted in the Annual Report. Work of this nature is, therefore, referred to in the present chapter.

GOVERNMENT REFERENCES

78. (*a*) Government in the Revenue Department requested this Department to submit a note on what articles imported from foreign countries are likely to be profitably manufactured within this Presidency and especially at the Nasik Distillery. A detailed report on the subject was submitted to Government.

(*b*) Government in the General Department requested this Department to suggest means for the prevention of adulteration of edible oils with "white oil." A short report discussing the important aspects of the question was submitted to Government.

(*c*) Government in the Revenue Department requested this Department to express an opinion as to whether it was desirable to allow a peppermint factory in a residential area. The necessary information was submitted. Government were pleased to allow the establishment of the factory in the area in question.

(*d*) The Forest Department makes purchases annually of clothing required for its subordinates. In connection with the supply of clothing required for the year 1930-31 the Industries Department was requested by Government to give its opinion in the matter of purchase of suitable cloth. On the recommendation of this Department Government were pleased to sanction the purchase of cloth of Indian make.

(*e*) A reference was received from Government on the question of the revision of the publications—Dictionary of Economic Products of India and Commercial Products of India. The views of heads of important firms interested in the question were obtained and communicated to Government together with the Director's own views on same.

(*f*) Views were expressed by the Department on the recommendation of the Depressed Class and Aboriginal Tribes Committee contained in paragraphs 67 and 68 of their report relating to instructions in improved methods of tanning, rope making, basket making, etc., on the lines of the present Weaving Schools, and institution of Industrial Scholarships for backward and depressed classes.

(*g*) The Associated Chambers of Commerce of India and Ceylon adopted a resolution requesting the Government of India to remove the import duty of 15 per cent. *ad valorem* now levied on road graders imported into India. The Department submitted its views to the Government of Bombay in the matter.

SCIENTIFIC AND INDUSTRIAL RESEARCH

1930-31

79. A summary of the progress of Scientific and Industrial Research during 1930-31 was sent to the Government of India for inclusion in the Annual Report of the Committee of the Privy Council for scientific and Industrial Research, London. The material for the summary was furnished by some of the educational and scientific institutions in this Presidency.

As mentioned in the last year's report most of the research work that is being done in the colleges of the Presidency is of academic importance only. Very little work is done which is of industrial and economic importance. This year also the most favoured field has been organic chemistry. But the amount of work done in Physical Chemistry increased considerably during the year. In organic Chemistry most of the work done is on the preparation of the derivatives of organic compounds. In Physical Chemistry work is being done in various fields, important work being on the Sols and Gels of various hydroxides, on the crystal structure of various compounds, and on conductivity.

The year under report showed an improvement in the amount of work which is of some industrial importance. Important work in progress in this field during the year was (*a*) isolation of starch and fatty oil from Jawari (Sorghum Vulgari), (*b*) the preparation of a tallow substitute for Textile Mills, (*c*) the isolation of saponins from soap nuts (Sapindus trifoliatus), (*d*) the constitution of the fruits of Adansonia digitata, (*e*) the isolation and identification of alkolides, etc., from Indian medical plants and (*f*) the synthetic plastics from the condensation of Phenols and Formaldehydes. Work on the utilisation of sea-weeds that was going on has been completed.

In Biology work which has been going on for some time on the Cromosomal and cylological studies and on Pollen development was continued. Important work was done on the photo synthetic activities, osmotic and suction pressure and on the absorption of various gases by rice plants, and work on the Morphology of rice plant was continued. Same remarks apply to the study of various species of life in the Presidency.

In Physics there was a considerable increase in the amount of work done during the year. Important work in various branches was in progress including that on Raman Radiation and on Raman Effect.

As mentioned before the year under review showed an increase in research work of some Industrial importance. But the work that is being done in this field is insignificant when compared to the industrial needs and potentialities of the country. The colleges and institutes should provide greater facilities for industrial research than at present. The establishment of a Central Research Council is quite essential for bringing about the desired co-ordination in the work which is being done at present and to encourage and organise Industrial Research on a comprehensive scale.

MISCELLANEOUS ACTIVITIES OF THE DIRECTOR OF INDUSTRIES AND THE TECHNICAL STAFF

80. During the year under review the Director of Industries was a member of the Advisory Committee of the Royal Institute of Science, the Board of Management of the Victoria Jubilee Technical Institute, the Committee of Direction for Technical Education, the Board of Trustees of the Prince of Wales Museum and the Bombay Smoke Nuisances Commission. The Director attended altogether 30 meetings of these bodies during the year.

81. (*a*) The Academic Council of the University of Bombay appointed a Committee under the Chairmanship of Sir M. Visvesvaraya to prepare a scheme for the establishment of a University College of Chemical Technology in Bombay. The Industrial Chemist was appointed a member of this Committee. He was also appointed a member of two of the three sub-committees appointed by this committee to prepare a scheme and draft a report. The Report submitted by the Committee has been published by the University and is now under the consideration of the Syndicate.

(*b*) There was a dispute between two firms on the question as to whether it was economically possible to manufacture sugar out of Mohra flowers. The Industrial Chemist gave expert evidence on the subject before the High Court of Bombay.

EXHIBITIONS

82. It is the policy of this Department to encourage the holding of exhibitions by private enterprise and to participate in same.

During the year under review no important exhibition of All-Presidency character was held. A number of small exhibitions of a local character to stimulate the sale of Indian-made articles, specially cloth, were, however, held and the Department took part in some of these.

The Department participated in the District Agricultural Show held at Gangapur, a village in the Nasik District, in December 1930. Weaving of fine silk-bordered saris, coating and niwar manufacturing etc. by improved methods was demonstrated.

The Department participated in the All-India Swadeshi Industrial Exhibition held at Gadag, District Dharwar, from 25th January to 9th February 1931 by sending the Dyeing Demonstration at Dharwar to the Show grounds. Dyers and weavers at Gadag and Betgeri took advantage by attending the demonstration regularly with a view to learn cotton and silk dyeing. About 30 persons from different places attended the demonstration at the Exhibition and learnt the art.

A demonstration of hand weaving by modern methods was also held which attracted a large number of weavers. The work of manufacturing Tiruwiki sari with silk borders on a fly shuttle loom and khadi weaving aroused considerable interest.

83. During the year under review the following exhibitions were brought to the notice of the public :

(1) British Industries Fair and the Leipzig International Industries Spring Fair.
(2) Exposition Colonial International De Paris, 1931.
(3) The IV Mangalore Agricultural and Industrial Exhibition, 1931.
(4) Milan International Samples Fair.
(5) Mysore Dasara Exhibition, 1930.

LIBRARY

84. A library is attached to the Department of Industries which contain 3,168 books. During the year 214 books were added to the library. The library is being gradually added to, so as to increase its usefulness to the Department and the public interested in Industries. Many important technical journals are also regularly received in the Department.

The library is open for reference to the general public at any time during office hours on working days. It is gratifying to note that members of the public are taking advantage of this arrangement.

CHAPTER VI

CONCLUSION

STAFF

85. I held charge of the office of Director of Industries for the whole year. Dr. M. S. Patel held charge of the post of Industrial Chemist for the whole year. Mr. M. E. Haskell held the post of Industrial Engineer for the whole year from 16th May 1930. During the year under review the other staff of the Department was the same as reported in the last year's report.

TOURING

86. During the year I was out of my headquarters for 70 days and visited the following places : Poona, Varangaon, Dharangaon, Dhulia, Malegaon, Satana, Ahmednagar, Belapur, Karachi, Hala, Hyderabad, Tando Allahyar, Nasarpur, Sukkur, Lakhi, Larkana, Lahori, Broach, Amleshwar, Dapuri, Karad, Ogalewadi, Gokak, Benchimardi, Belgaum, Marihal, Dharwar, Hubli, Gadag, Lakkundi and Belganur.

My visits to the different places were in connection with the inspection of weaving schools and demonstrations and dyeing demonstrations of this Department and inspection of the industries existing there.

The Industrial Engineer was out of headquarters for 40 days and visited Surat in connection with the investigation of improvements in gold and silver thread industry.

Similarly the Industrial Chemist was out of headquarters for 3 days and visited Poona in connection with demonstrating the use of petrol gas in making smooth joints in glass bangles.

VISITS TO WORKS

87. The Director and the two officers mentioned above visited 88 factories in connection with the investigations in hand and rendering of Technical advice, etc.

EXPENDITURE

88. The expenditure incurred by the Department of Industries during the financial year 1930-31 and the three preceding years was as follows :

	Rs.
1927-28	69,472
1928-29	77,669
1929-30	1,05,924
1930-31	1,23,715

During the year under report receipts from the sale of cloth produced at the various weaving schools and demonstrations of the Department and miscellaneous receipts amounted to Rs. 4,518. The net expenditure of the Department for 1930-31 was, therefore, Rs. 1,19,197.

CONCLUSION

89. The activities of the Department are restricted for lack of funds. The Department could very usefully enlarge its work in various directions, covering both organised and cottage industries. Taking the latter only for the moment, work can with advantage be at once undertaken covering practical demonstrations in connection with village tanning industry.

Government have been pleased to approve a proposal of this Department in this connection and it is hoped that money for it will be made available in the budget for 1932-33. More weaving schools to teach agriculturists weaving as a spare time occupation can with advantage be opened in different parts of the Presidency. Similarly work for the hand weavers can be usefully extended. Same remarks apply to dyers and calico printers.

I have pleasure in stating that the entire staff, both technical and clerical, worked efficiently and willingly throughout the year.

P. B. ADVANI,
Director of Industries.

Annual Report.

Annual Report of the Department of Industries for the year 1930-31.

GOVERNMENT OF BOMBAY.

GENERAL DEPARTMENT.

Resolution no. P. 73.

Bombay Castle, 1st August 1931.

Letter from the Director of Industries, Bombay, no. I.C. 20-4681, dated the 29th July 1931.

RESOLUTION.—Government have read the report of the Department of Industries for the year 1930-31 with interest and are pleased to convey their thanks to the Director of Industries for his instructive and suggestive review of the industrial position. The Director's comments on the prospects of new industries are of special interest.

2. Government note with satisfaction the work that the Department of Industries with its limited resources has been able to accomplish for the gold thread and tallow industries and the various methods by which they have been able to assist with expert advice a variety of new or not fully developed industries.

3. Government attach very great importance to the support of cottage industries. They are also satisfied that the work that is being done for the handloom weaving industry is of great value and trust that the new Weaving Institute which has been started in Poona will prove of real use to master weavers and to others who wish to carry forward the present status of the cottage weavers. If finances permit, Government would like to extend corresponding facilities to the Tanning Industry.

By order of the Government of Bombay
(Transferred Departments),

J. B. FERNANDES,
Under Secretary to Government.

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gitized with financial assistance from th
Government of Maharashtra
on 20 July, 2017

To

The Commissioner in Sind,
The Commissioners of Divisions,
The Commissioner of Excise, Bombay,
The Director of Industries,
The Collector of Bombay,
The Collector of Salt Revenue,
The Collector of Customs and Shipping Master, Karachi,
All Collectors, including the Deputy Commissioner, Upper Sind Frontier,
The Director of Agriculture,
The Registrar, Co-operative Societies,
The Chief Conservator of Forests, Bombay Presidency,
The Conservator of Forests, Northern Circle,
The Conservator of Forests, Central Circle,
The Conservator of Forests, Southern Circle,
The Conservator of Forests, Sind Circle,
The Superintendent, Government Printing and Stationery, Bombay,
The Accountant General,
The Director of Public Instruction,
The Director of Information and Labour Intelligence (with copies of the Report for the Editors' Tables and Editors of Newspapers),
The Compiler, General Administration Report,
The Oriental Translator to Government,
The Private Secretary to His Excellency the Governor,
The Revenue Department,
The Educational Department,
The Public Works Department,
The Finance Department,
The Home Department,
The Chamber of Commerce, Bombay,
The Chamber of Commerce, Karachi,
The Indian Merchants' Chamber, Bombay,
The Millowners' Association, Bombay,
The Millowners' Association, Ahmedabad,
The Bombay Piecegoods Merchants' Association, Bombay,
The Bombay Presidency Trade Association,
The Grain Merchants' Association, Bombay,
The Bombay Underwriters' Association,
The Indian Merchants' Association, Karachi,
The Indian Chamber of Commerce in Great Britain, London,
The Karnatak Chamber of Commerce, Bagalkot,
The Government of India.

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